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praised; hence it carries its own recompense with it, which is sovereign happiness. And as this constitution of the Divine Nature gives entire satisfaction to him who possesses it, it is the best and most desirable for all creatures that depend upon God. If the will of God had not the principle of the best for its rule, it would tend towards evil, which would be the worst, or it would be in some way indifferent to the good and the evil, and be guided by chance; but a will which allowed itself to be guided by chance would not be worth more for the government of the universe than the fortuitous concourse of atoms without the existence of any divinity at all.—Nay, even if God' should not abandon Himself to chance in some cases—as He certainly would do if He did not always choose the best, and if he were capable of preferring a less good to a greater good (that is, an evil to a good, since that which prevents a greater good is an evil)—He would still be imperfect as well as the object of His choice. He would not deserve entire confidence. He would act, in such a case, without reason, and the government of the universe would be like some games: balancing between reason and fortune. All this tends to show that this last objection raised against the choice of the best perverts all conceptions of the free and the necessary, and represents even the best to us to be bad: to do which is either malicious or ridiculous.

OLD AND NEW SYSTEMS OF LOGIC.

Comparison of the English Conservative and Hegelian Methods as developed in Bowen's Logic and Everett's Science of Thought.

By F. P. Stearns.

There is no word which we hear more frequently than "logic"; we are told every day by lawyers, politicians, and the newspapers, what is logical and what is not; yet to tell us exactly what logic itself is would puzzle many a skilful manufacturer of arguments. There are not a few indeed who have been applied to lately, men who possess considerable scholarship, and yet were unable to supply the information required. One might have begun to suspect that the power of defining logic was among the lost arts, had not the recent publication of a book, called "The Science of Thought," by Rev. C. C. Everett, arrived to convince us of the contrary. This octavo volume has now been before the public for about three years, and as yet only one edition of it has been sold; —a discouraging fact, when we consider its great value to American literature, and to the science of the world. Evidently, like many other works of art, it must wait its time for due appreciation. One alone, whose extensive scholarship and deep philosophical penetration ought to give weight to his opinion, declares it to be the most important work of its kind in English since the time of Bacon and his "Novum Organum." This is certainly a startling announcement. The development of modern science with all its wonderful results can be traced, it is said, directly back to Bacon's exposition of the inductive method of reasoning. Leibnitz, Newton, Herschel, and others, deserve credit for what each specially did, but it was Bacon who first pointed out the way for them to work in. When we consider the immense importance which modern science has for us—how, for instance, we depend upon it for our commercial prosperity—we may begin to measure the value of a theory, if only that theory be a true one. It would be hazardous to prophesy that Mr. Everett's theories were also to produce such remarkable effects. History does not usually repeat itself in that way. But that he has also, like Bacon, been instrumental in bringing somewhat out of darkness into daylight, I venture to say, will one day be admitted.

Take, to commence with, his definition of logic, which is also the title to his book—"the science of thought." What light that throws upon the subject at once! The indistinct impressions of those who have so long used the word without knowing what it meant, must now be cleared up. Statements are logical which are made according to those laws which govern the correct use of our minds; and the illogical is what results from mental perversion. Notice how this widens our horizon. The old theory was that logic had only to do with the truth or falsehood of arguments, but here we have it extended over every department of human activity; for there is nothing done but what mind directs the doing of it; and to be done well and wisely, it must be done logically too. The most practical arts, and most abstract sciences as well, are then in direct dependence upon this new system of reasoning, which indeed has long been in use with the best reasoners, such as Shakespeare for instance, but for want of explanation has remained even to philosophers unknown.

From the time of Aristotle to the opening of the present century, logic had remained almost entirely unprogressive. What is now taught in the schools of England and America is Aristotle's theory of logic, invented by him twenty-two centuries ago, at a historic period of great intellectual brilliancy indeed, but at the same time one almost destitute of science and scholarship. Fortunately few ever undertake to use it in practice. During the middle ages, when people did use it, the result was such an enormous mass of tangled and twisted discussions, as modern times only look at to laugh over. To the great German Hegel belongs the honor of taking up again the thread where Aristotle had let it fall. He was the inventor, and Mr. Everett now the translator, although not without considerable invention, too, of his own. What Hegel in his effort for discovery stated in so difficult and obscure a manner that even in Germany his name has become a symbol for perplexity, Mr. Everett has been so fortunate as to explain in a style so clear and intelligible as English prose has rarely seen before. Schopenhauer and Stuart Mill have also stood behind Mr. Everett's work to a slight extent, but, for all that, there is such value in the superior form of his statement that we must still consider the entire book in the light of an original production.

To explain this new system of reasoning satisfactorily would require hardly less space than Mr. Everett himself has given to it. Where a subject is so vast as the domain of thought, it is not to be described or even more than hinted at in any such sketch as the present. If one or two principal points are seized upon and put forward in a clear light, something however will be gained, and public attention, it is to be hoped, attracted in the right direction.

One such point we find in the statement that logic is not and never can be an exact science. As far as Truth extends its path into the region of the unknown, Logic must march with her, and be at the same time both guide and follower. As fast as human thought improves, the science of thought will have a chance to improve with it, in the same way that chemistry must be ready at any moment to accept the discovery of a new element or chemical principle. This is in direct contradiction of the old doctrine which teaches that logic is only concerned with the *form* of thought, not with *thought itself*, and therefore to be contained in certain rigid formulas, the complete mastery of which would enable the student to reason correctly under all circumstances. Instead of doing so, however, it rather tends to make him dogmatic and sophistical. The difference is like that between a progressive and a stationary civilization. Then, since the progress to be real must be unlimited, we feel ourselves enabled, with the prospect before us, not only of making infinite new discoveries, but infinite improvement of the means of discovery. The deficiencies of the old system in this respect are just what inclined Bacon to throw it aside altogether and adopt a new method of his own. In his day it stood in the way of physical science, but now with us in the way of metaphysical — although, what at first sight seems rather strange, not so much so as that very method which Bacon's genius established.

The most important difference however, the precise point where Hegel and Everett leave all predecessors behind them, is in this treatment of the syllogism. Every one is familiar with the old Aristotelic syllogism, its major premise, minor premise, and conclusion. One quite common example in the schools is—

> "No person deserving respect is a boaster; but
> Some heroes are boasters; and, therefore,
> Some heroes do not deserve respect."

By means of an A B C formula this was changed into four different figures, all of them amounting to pretty much the same thing, as, for instance, "No boaster deserves respect," in place of "No person deserving respect is a boaster." Each particular argument which came into the mind, or issued from the lips of man, was to be reduced to this form, and its truth or falsehood decided by simply ascertaining whether the minor premise was really included by the major or not. To make this reduction correctly, however, it was necessary to use a contrivance of five Latin verses to assist the memory, a contrivance which Mr. DeMorgan, an English logician of the old school, has named "the magic words more full of meaning than any that were ever made," and they certainly are wonderful after their fashion. Here we have them:

Barbara, *Celarent*, *Darii*, *Ferioque prioris*,
Cesare, *Camestres*, *Festino*, *Baroko secundæ*,
Tertia Darapti, *Disamis*, *Datisi*, *Felapton*,
Bokardo, *Ferison habet. Quarta insuper addit*,
Bramantip, *Camenes*, *Dimaris*, *Fesapo*, *Fresison.*

Of course, it is evident to all practical persons that no effective thinking can be done while a man's brain is encumbered with such a load as that. In justice to Mr. DeMorgan's own writings, it should be said that he probably never used it himself. To explain the special significance of each of these magic words, and the way in which they can be made to work, would require many pages of difficult reading, and even then might not help us to a better understanding of the case. It is enough to have taken this bird's-eye view of the Aristotelic syllogism, and perceived in a rough general way what its special characteristics are. Now let us look at the Hegelian.

In the argument, "No person deserving respect is a boaster, and some heroes are boasters, and therefore some heroes do not deserve respect," the conclusion is undoubtedly correct if we can be sure, among other things, that the first clause is true. But this *if* is just what probably gave Hegel the key to his great discovery. How are we to know whether it is true or not? Evidently not by means of other syllogisms of this same kind. Where are we to find a major premise which will now and forever be absolutely true? The universal consent of the human race would not make one so as long as the possibility remained of one individual changing his mind. Some skeptics may even be found who will demand proof of the fact that all men are mortal; and how are you going to prove that they are? In the case of the example given above, any discriminating person acting upon common sense principles would declare at once that the major premise was false—not because boasters do deserve respect, but because a man may have many virtues, and be a boaster besides. Common sense, however, works without explaining itself, and cannot be taken as a standard for us to judge by. Hegel knows better than the common sense of most men. He tells us that we must have two other forms of the syllogism to prove and correct the first, the three together forming a triad, mutually supporting each other. The one already given, the Aristotelic, is called Deduction; the second, the Baconian, Induction; and the third, belonging especially to Hegel, Identification. Mr. Everett represents them by the formulas

I P U, P I U, and I U P,

in which U represents the universal, P the particular, and I the Individual term; the important point in each form being, which of the three terms connects the two others. It makes no difference which stands first or last; we can have U P I as well as I P U. "*John is mortal because all men are mortal.*" The individual *John* is connected with the universal term *mortal* by means of the particular term *men.*

It is proved that John is mortal if we are sure at the same time that all men are mortal, and that John is a man. These facts are necessary to make the deduction of any value, and how are we to obtain them? The second form, the Inductive, gives us P I U, or "Man is mortal because John is mortal," only in this case it is not really John but our experience of all other men besides John that we insert for the individual term. Also the third form, that of Identification, ends the series, convincing us in the formula I U P that John is a man because he possesses those marks and peculiarities which distinguish mankind from brutes. In going through this process, however, and in the second step as well, we shall find ourselves continually falling back for support upon the two other forms of the syllogism. Thus do we arrive at a unity in the three, a sort of logical trinity, by means of which the separate results of the different forms may be combined together in a harmonious and substantial whole. Indeed no course of reasoning can be considered sound unless conducted by this method, and the results of deduction, induction and identification made to harmonize and combine with each other as naturally and perfectly as the elements in a chemical compound.

So far all seems sufficiently simple. But when we come to practical application, each form branches out into a science by itself. The pursuit of these different sciences becomes an unlimited study, although not on that account an indefinite or obscure one. This will best be seen when we consider that in Induction alone the materials to be used are co-extensive with the scientific knowledge of the world, and liable to increase with every future discovery. Full information in this regard, however, is not necessary for good reasoning. A certain amount of ignorance is inevitable in the best furnished minds, and every day we are all of us compelled to think and act according to the best light we have. A machinist may make good engines without knowing anything of the last invention in mechanics. He knows enough to be logical in his department. Common sense is the average logical power of the community. It has already been hinted that common sense and Hegelianism are not very different. It admits of progress, and becomes a better common sense as the community becomes more and more civilized. The best common sense for any individual must always be the amount of logical science which he was capable of putting to a practical application. It is necessary, however, that caution should be observed in this application, not to attempt to deal with problems more extensive than one's logical knowledge. The logic which will teach a man to get out of the way of a mad dog, though perfectly good and efficient for the occasion, is of a much lower degree than that a judge has need of to decide properly upon a case in court.

Mr. Everett sketches the outlines of these three sciences, Deduction, Induction, and Identification, in a most clear and interesting manner. First, under Deduction we have a consideration of those transcendental facts or truths through which alone experience becomes possible. Existence, or the universal, comes before the particular and individual; and the very idea which would induce one to learn the lesson which experience teaches, must be admitted before any experience can take place. In this direction we are led into the provinces of Theology, Philosophy, Ethics, and Æsthetics. Knowledge and progress in truth, beauty, and goodness, are requisite for sound deductive reasoning. This is certainly the most abstruse and difficult branch of the subject. But it must be a great satisfaction to those who esteem the good and beautiful as well as cold truth, to find that these also are logical. The old system leaves no place for such an idea. In that, logic was an inflexible mathematical form, rigid as a railroad track — upon which, indeed, those who would educate their minds were to be dragged along at such a rate that no sight could be had of what the world and life was made of.

With Induction we come upon the extensive array of the natural sciences, and the correct course of pursuing them. A number of facts are collected together. On examination a certain similarity is detected among them, which leads to the suspicion that a natural law pervades the group. This law immediately has to be tested by application to other facts, and if it agrees with all the instances we know of, then its real existence may be inferred. Absolute certainty, however, is not assured until the rule thus obtained has been put into the other two forms of syllogism also, and found to answer for what they require of it. There is a distinction, however, to be drawn between rules which may be temporarily serviceable, as a sort of scaffolding of thought, and those which have their origin in the nature of things, existing as necessary laws. Both are requisite, but the last are much more important than the first. The peculiar art of inductive reasoning consists in judging how many facts ought to be collected before we proceed to generalize from them. Clearly it is impossible to collect all facts, and hasty generalization from an insufficient number is the most common of all sources of error. No exact regulations can be given in this direction; but much experience in thinking and testing the truth of one's thoughts, finally gives a sort of intuitive perception of when the right point has been reached. Practice also, and the sense of harmony which is innate in all good minds, give intuitively the power to reach true generalizations from very few instances, or even from only one. Drawing inferences from a single example, however, can only be done by the class we call geniuses, those wonderfully endowed minds, whose action, even in unconscious moments, is similar to that of the universal laws. Analogy, or what the phrenologists call

Comparison, is another variety of inductive reasoning. The old school admit it only in the way of a rhetorical finish to other and more solid arguments.. They say, "Compare a man with a horse, if you like, for the sake of a figure of speech, but not for practical purposes." Mr. Everett, on the contrary, e[illegible]ns how all things in the world, physical and metaphysical, are related to each other as the parts of an organic whole, and are not to be justly considered except through this faculty of comparison. In truth, considering our present lack of facts sufficiently broad to serve for universal terms in deduction, Analogy, raised to this high rank, becomes at least as important as any other branch of reasoning. It might be called the poetic form of logic, because poets so much depend upon it; and on that account there is more correct reasoning in Homer's Iliad than in all the metaphysics written previous to the last century. A satisfactory explanation of how the science of thought is concerned with poetry as the highest form in which mind ever states itself, is yet among things of the future. We yet await the philosopher who shall tell us wherein the superiority of Homer, Dante, and Shakespeare, consists. Mr. Wasson in his Epic Philosophy* has opened the door-way in this direction, but the grandeur and beauty of a new unappropriated world is yet to be sought for in the subject.

In the third and last form of the syllogism another and quite different process must be followed. In order to identify the individual "John" with the particular "man," we have to observe and note down all the general characteristics which belong to John, then consider whether they agree with the special characteristics of man. For such an operation rules and theories are of little use; it is rather the field of the scientific investigator. A good example would be, the discovery of a new species of fish, and the discussion which would follow as to which of the numerous genera of fishes it should properly be classed with. As heretofore, we have to face and overcome an element of uncertainty. Different authorities give different systems of classification, improvements are continually appearing, and, above all, it is difficult to decide at what point to draw the line where subdivision of genera into species is to stop. The very example you have in hand may be the cause of changing the arrangements of whole groups. This uncertainty, however, is not illogical, as I have already tried to prove. Its right interpretation is that we should not consider our results too much as absolute facts, but as being the best to be had now, and to be acted on in the way a merchant invests his money where there is the greatest probability of gain. It also teaches a careful and studious investigation of the world as it is, and admonishes not to hurry on hastily to unripe conclusions.

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* North American Review for October, 1868.

In Identification, as already in Deduction and Induction, the other two forms of the syllogism play an important part. The naturalist reasons down from all the established facts in regard to fishes, and up from the peculiarities of the specimen before him. Thus is the unity and mutual dependence of the three established. To quote Mr. Everett's own words, "The first form is that of abstract deduction. The second that of comparison. The scattered objects of the world are taken in all their diversity and arranged over against each other. The third brings us to concrete individuality, and thus appropriately forms the climax and close of the series." The new system is indeed, compared with the old, what a living, active, thinking human being is to an Egyptian mummy. The last is an historical relic, valuable and interesting to the student; but the first is the real fact of to-day, on a mission of vital importance. and with all the great possibilities of the future before him.

MENDELSSOHN.

By Edward Sobolewski.

The beginning of this century boasted four distinguished composers: Felix Mendelssohn-Bartholdy, 1808; Robert Schumann, 1810; Franz Liszt, 1811; and Richard Wagner, 1812. At that time Beethoven was already in his glory, and consequently the idol of every student of the art of music. The four masters before named, although very different in their inner nature, made no exception in this respect, but looked upon Beethoven as their "beau-ideal" of composition.